TABLE 1
NOER/LOER DATABASE SUMMARY
FISH TISSUE SCREENING LEVEL DEVELOPMENT
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

	Phase 1[1]	Phase 2[2]			
		SETAC Database (Jarvinen and Ankley, 1998)	ERED Database (COE, 2005)	Combined Databases	
Analyte	Tissue Screening Level via BCF Approach?	Data Points[3]	Data Points[3]	Acceptable NOER/LOER Pairs[4]	Acceptable NOER/LOER Pairs (unique species)[5]
Arsenic	Yes	47	154	11	2
Cadmium	Yes	488	1,149	52	29
Chlordane	Yes	0	60	4	4
Lead	Yes	42	406	7	4
Pentachlorophenol	Yes	33	237	9	4
Total PCBs (as 2,3,7,8-TCDD toxicity equivalents)	Yes	104	188	4	3
Total PCBs (as Aroclors)	Yes	101	233	17	8
Pyrene[6]	No	17	35	1	1
Selenium - Inorganic	Yes	136	451	26	5
Selenium - Organic		11	0	4	2
Tributyltin	Yes	66	350	3	2
Dioxins and Furans (as 2,3,7,8-TCDD toxicity equivalents)	No	94	466	16	4
Fluoranthene[7]	No	9	139	3	2
Hexachlorobenzene[8]	No	27	89	2	2
Mercury - Inorganic	Yes	134	366	16	7
Mercury - Organic	Yes	105	180	2	2
Total DDT	Yes	102	154	16	9
4,4'-DDT	Yes	102	154	16	9
4,4'-DDE	Yes	4	131	0	0
4,4'-DDD	Yes	2	15	0	0

Notes:

[1]Tissue screening levels calculated in Phase 1 using the BCF x AWQC approach.

[2]Endpoint selection criteria for Phase 2 followed the Stevens et al. (2005) approach.

[3]Number of studies that simultaneously report both endpoints

[4]Duplicate NOER/LOER pairs were removed from the combined database.

[5]Only one NOER/LOER pair for each species will be used to calculate the species sensitivity distrubution for each analyte.

[6]ERED database had one additional LOER data point, while pyrene studies in SETAC database all used the same test species. Only one unique test species for LOER data points.

[7]ERED database had three additional LOER data points, while fluoranthene LOER data points in SETAC database were all determined using the same test species. Four unique test species for LOER data points. However, species are two species of copepods (*Coullana* sp and *Schizopere knabeni*), amphipod (*Diporeia* sp.), and mussel (*Mytilus edulis*).

[8]ERED database had two additional LOER data points, while hexachlorobenzene LOER datapoints in SETAC database were all determined using the same test species. Only three unique test species for LOER data points.

NOER = No observed effect residue

LOER = Lowest observed effect residue

Shading indicates that there are at least four acceptable NOER/LOER pairs.

TABLE 2
TISSUE SCREENING LEVELS
AWQC x BCF METHOD and SSD METHOD
FISH TISSUE SCREENING LEVEL DEVELOPMENT
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

Chemical	CASRN	National Recommended Water Quality Criteria[1,2] Criterion Continuous Concentration		Recommended BCF[3]	Water Quality Criteria x BCF Tissue Screening Levels[4]		Species Sensitivity Distribution (95% Species Protection Level) Tissue Screening Levels[5]		
		Freshwater (µg/l)	Saltwater (µg/l)	(l/kg)	Freshwater (µg/kg)	Saltwater (µg/kg)	LCL (µg/kg)	Mean (µg/kg)	UCL (µg/kg)
Arsenic	7440-38-2	150	36	114	17,100	4,104	--	--	--
Cadmium	7440-43-9	0.25	8.8	907	227	7,982	113	146	184
Chlordane	57-74-9	0.0043	0.004	15,338	66	61	9.83	185	536
Lead	7439-92-1	2.5	8.1	414	1,035	3,353	1.79E-23	13.4	404
Pentachlorophenol	87-86-5	15	7.9	6,979	104,685	55,134	6.26E+16	8,180	20,900
Total PCBs (as Aroclors)	1336-36-3	0.014	0.03	5,531	77	166	21.1	172	570
Total PCBs (as 2,3,7,8-TCDD toxicity equivalents)	1336-36-3	0.014	0.03	7,568	106	227	--	--	--
Pyrene	129-00-0	--	--	--	--	--	--	--	--
Selenium	7782-49-2	5.0	71	129	645	9,159	--	--	--
Selenium (Geo Method)	7782-49-2	--	--	--	--	--	Unable to Calculate[6]		
Selenium (Hope Method)	7782-49-2	--	--	--	--	--	4.6	65.4	151
Tributyltin	56573-85-4	0.063	0.010	866	54.56	8.66	--	--	--
Dioxins and Furans (as 2,3,7,8-TCDD)	1746-01-6	--	--	--	--	--	2.27E-83	0.00636	0.048
Fluoranthene	206-44-0	--	--	--	--	--	--	--	--
Hexachlorobenzene	118-74-1	--	--	--	--	--	--	--	--
Mercury	7439-97-6	--	--	--	--	--	--	--	--
Mercuric chloride (inorganic mercury)	33631-63-9	0.77	0.94	3,530	2,718	3,318	3.40	46.9	170
Methyl mercury	22967-92-6	0.77	0.94	11,168	8,599	10,498	--	--	--
Total DDT	--	0.001	0.001	15,706	15.7	15.7	67.9	115	172
4,4'-DDT	50-29-3	0.001	0.001	15,706	15.7	15.7	67.9	115	172
4,4'-DDE	72-55-9	0.001	0.001	7,148	7.1	7.1	--	--	-
4,4'-DDD	72-54-8	0.001	0.001	17,022	17.0	17.0	--	--	--

Notes:

[1] U.S. Environmental Protection Agency (EPA). National Recommended Water Quality Criteria (2004).

[2] Cadmium and lead criteria are hardness dependent and were calculated using a hardness of 100 milligrams per liter.

[3] See text for a discussion on how the recommended bioconcentration factor (BCF) was chosen.

[4] The recommended tissue screening levels were calculated by multiplying the National Recommended Water Quality Criteria by the recommended BCFs.

[5] See text for discussion on how species sensitivity distributions values were calculated. Values presented are based on a species protection level of 95%.

[6] See text for additional discussion. SYSTAT Version 10 (statistical software) was unable to calculate alpha (intercept) and beta (slope), which are required to produce the species sensitivity distribution.

-- = Not available or not applicable

CASRN = Chemical Abstracts Service Registry Number

µg/l = micrograms per liter

l/kg = liters (water) per kilogram (tissue)

µg/kg = micrograms per kilogram

LCL = 95% lower confidence limit

UCL = 95% upper confidence limit

Shading indicates that the values presented are questionable.